DOCUMENT RESUME

ED 446 739 IR 020 368

AUTHOR Koppi, A. J.; Chaloupka, M. J.; Llewellyn, R.
TITLE Computer Mediated Courseware Development and the Academic Culture.
PUB DATE 1999-00-00
NOTE 7p.; In: ED-MEDIA 99 World Conference on Educational Multimedia and Hypermedia & World Conference on Educational Telecommunications. Proceedings (11th, Seattle, Washington, June 19-24, 1999); see IR 020 357. For full text table of contents: http://www.aace.org/conf/edmedia/99/toca.pdf; individual papers: http://ww.aace.org/conf/edmedia/99/edm99add.pdf.
PUB TYPE Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Access to Information; Computer Oriented Programs; *Courseware; Educational Environment; *Educational Resources; *Educational Technology; Foreign Countries; Higher Education; Instructional Design; Instructional Development; Instructional Innovation; *Instructional Materials; Online Searching; Ownership
IDENTIFIERS Australia

ABSTRACT

While working collegially, academics usually maintain an objective distance from the work of their peers. Higher education institutions also tend to differentiate themselves from other institutions and define their own special niche in the marketplace. These attitudes are concerned with establishing uniqueness and they contribute to an academic culture that pervades the education system from the individual academic to the institution level. This culture rewards teachers for designing unique courses. In Australia in particular, this personal course development is accepted practice to the extent that cross-institutional formal evaluation and comparison of courses does not generally occur. An academic will not normally adopt another academic's course without personalizing it. Individual academics (or small groups) put together courses and computer-aided learning packages. Consistent with the cultural practices, few other academics in the same discipline at other institutions adopted these inflexible courses. The conclusion is that the uptake of learning programs by teachers and institutions will only occur if the programs are consistent with the academic culture and are customizable. A recent development in Australia, the National Teaching and Learning Database (NTLD) project is designed to provide access to educational resources. Course developers submit a URL of the location of those learning materials, but ownership is retained by the institution that developed the original material. The NTLD is a distributed database that provides access teaching and learning materials to be customized, assembled, and utilized in a manner that suits the individual academic or institution style. (AEF)

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ED 446 739

COMPUTER MEDIATED COURSEWARE DEVELOPMENT AND THE ACADEMIC CULTURE

Koppi, A.J., Chaloupka, M.J. & Llewellyn, R.

New Technologies in Teaching and Learning, Carslaw F07, University of Sydney, NSW 2006, Australia
Email: tony@nettl.usyd.edu.au

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Abstract

Tertiary teachers are generally creative individuals, critical thinkers and experts in a particular field. Whilst working collegially, academics usually maintain an objective distance from the work of their peers. Tertiary institutions also tend to differentiate themselves from other institutions and define their own special niche in the market place. These attitudes are concerned with establishing uniqueness and they contribute to an academic culture that pervades the education system from the individual academic through to the institutional level.

This culture rewards the teacher (or group of teachers) for designing unique courses. In Australia in particular, this personal course development is accepted practice to the extent that cross-institutional formal evaluation and comparison of courses does not generally occur. An academic will not normally adopt another academic's course without personalising it. Academics make courses that are based upon personal experience and beliefs. These features of the academic culture may be characterised as idiosyncratic.

Consistent with the cultural practices, and public sector funding, individual academics, or small groups of academics, put together (idiosyncratic) courses and computer aided learning packages. Consistent with the cultural practices, few other academics in the same discipline at other institutions adopted these inflexible courses.

In keeping with the culture, an academic will utilise parts of the work of other individuals, e.g., in assembling a course, a teacher will weave together a unique fabric of personal experience and selections from published works – a chapter from here and a journal reference from there etc. Utilising a programme that cannot be teased apart or modified has little place in this culture. It is not flexible.

The conclusion is that the uptake of learning programmes by the teacher and institution will only occur if the programmes are consistent with the academic culture and are customisable. In keeping with the academic culture described, a recent development in Australia, the National Teaching and Learning Database (NTLD) project is designed to provide access to learning materials. The database comprises a centralised index of remote resources. These resources are held in other databases at the various contributing members' locations. Developers of learning materials submit a URL of the location of those learning materials. The primary resource (i.e., teaching and learning material) may either be held in the database(s) that is owned by the creators of the material or be submitted directly to the central database. In either case,

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ownership is retained by the institution that developed the original material. The NTLD is a distributed database (at many locations) which academics can search and obtain teaching and learning materials to be customised, assembled and utilised as appropriate to the individual or institution style.

Key benefits of the NTLD are a "one-stop" shop for teaching and learning resources that can be deployed or re-deployed using different educational methodologies, e.g., resource-based, problem-based, or constructivist models.

The aim of this paper is to seek to understand and describe the academic culture in order to be able to develop computer-mediated courseware that will be utilised by the individuals working within this culture.

1. INTRODUCTION

The academic culture has a range of attributes that lie between several continua of extremes. Collegiality at one end, and individuality at the other, describe one such continuum. The system rewards the behaviour that characterises both ends of this continuum, for example, collaboration in research is rewarded as is the demonstration of individual creativity. Individual performance is particularly prised and sought after and is accompanied by such questions as "but how much of it was really his/her own work?" This individualistic end of the continuum can lead to idiosyncrasy as academics seek to distinguish themselves from their colleagues. This idiosyncrasy can also pervade course development to the extent that individual teachers make courses unique to themselves. In fact, it is probably true to say that no two individuals will teach the "same" course in the same way. Each individual will seek to personalise the course in keeping with his/her own experience, beliefs and values. This also applies to computer mediated courseware development.

If individual academics can be labelled as idiosyncratic, institutions also attempt to distinguish themselves from each other. Thus, part of the academic culture can be characterised by individuality or idiosyncrasy at more than one level, including departments and faculties which seek to distinguish themselves.

Another continuum may be described by the extremes of conservatism and innovation. From the teaching point of view, the conservative extreme of the continuum may be concerned with maintaining the face-to-face didactic environment and one of many innovation extremes may be concerned with computer-based, on-line, distributed teaching and learning environments. It is probably reasonable to say that parts of both extremes are relevant and appropriate at certain times for certain purposes. Computer mediated courseware development belongs mainly at the innovation end of this particular continuum. The conservative extreme tends to resist technological innovation (Hesketh *et al.*, 1996; Crawford and Crawford, 1997).

2. COMPUTER MEDIATED COURSEWARE

Computer mediated courseware (CMC) has probably as many meanings and applications as there are people thinking about it. Broadly, CMC has enabled a kind of

learning which lies along a continuum of complete freedom at one end to prescriptive learning at the other end. From the student's point of view, at the one extreme, this freedom represents many things: to learn whatever, whenever and wherever; to access information and communicate conveniently at a global scale; to make one's own destiny by personalising and pursuing one's own knowledge interests; to not follow someone else's prescribed learning; and the ability to access continuing education while in the workforce. This might sit more comfortably in the constructivist philosophy where learners take responsibility for their own knowledge. At the other extreme, CMC is prescriptive and didactic and learning is characterised by memory work and repetition. In real life, learning takes place along the whole of this continuum, even within the same discipline.

From the teacher's point of view, the provision of CMC may be in response to student freedoms (or at least the desires for the realisation of these freedoms) but is also constrained by the rewards, values and aspirations of the academic culture to which most teachers probably subscribe. In many institutions, these constraints are fundamentally determined by the need to enrol students and provide them with structured learning programs that can be assessed.

3. THE ACADEMIC CULTURE AND COMPUTER MEDIATED COURSEWARE

An aspect of the academic culture includes the continuum of teacher/student dependency. At one extreme, the culture is teacher-centred and creates student dependency. At the other end, students are autonomous independent learners. This could result in a tension between flexibility and providing learning on demand, on the one hand, and control over what the student is learning on the other. Whatever, a goal of most teachers is to encourage students to take responsibility for their own learning. There would appear to be a fundamental paradox between a rigorous academic culture and flexibility. This tension is great where the academic culture has the teacher as the central figure (teachers set the curriculum and design the courses) whereas independent learning empowers the students (the students choose the learning materials and set the goals). A position somewhere between these extremes is the likely compromise where the teachers largely design the CMC yet the students have greater freedom in access and time of learning.

Thus, it seems that in the design of CMC, the prevailing academic culture is biased towards the end of the continuum where the teacher describes the path the student is expected to follow.

Another continuum that is part of the academic culture may be described as the spatial one. At one extreme, students attend all courses on campus, and at the other extreme, all courses are mediated in distance mode either by paper or electronic means or both. The spatial positioning is determined to some extent by the major goals of the institution. The academic culture is not just manifest by teaching and learning but also by the other major activity that occupies universities, that is, discipline-based research. In many (not all) disciplines, research is spatially dependent (e.g. laboratory based research), that is, the academic staff and students have to be in a particular location (at least some of the time) to do the research. If research of that nature is a

priority, it is in the interests of universities to foster spatial dependence in order to bring the students to the campus. In that case, there may well be a motivation amongst research academics to use CMC for on-campus activities.

4. SETTING COURSES

In a traditional setting, courses are set according to a combination of interests at several levels: the level of the institution through to the individual. The individual level is probably the one with the most influence on the type of course, content and method of interaction. Personal desires also play a large part. Most academics personalise a course and do not adopt one in its entirety without changing it to suit them. That course is developed from a combination of personal experience and external resources assembled to support the personal experience and beliefs of the academic. Generally the content is assembled as a result of a mix-and-match approach (a book chapter here; journal paper there etc) which results in an individual, if not idiosyncratic, course. How that subject is taught depends on a combination of the content, teaching and assessment methods. (It is well known that the assessment methods (usually time-honoured) often drive the learning.) Different institutions teaching the same subject may have variations in content and teaching and assessment methods producing a more-or-less similar course. Against this backdrop, there are major implications for CMC developments. The driving force of individual creativity in the setting of courses is a major factor in how CMC courses will be is developed.

Within the context of universities, many learning technology developments are not used or taken up beyond the person or group responsible for the innovation (Scott *et al.*, 1997; Alexander *et al.*, 1998). Dearing (1997) has suggested that the slow uptake of computer aided learning (CAL) packages is because of poor IT skills amongst academic staff. This may be true but we can also ask if there would be a great increase in the use of CAL packages if the IT literacy were very good amongst all academic staff? We believe that the answer would be negative because the academic culture that promotes individuality and idiosyncrasy would be unchanged simply by increasing IT literacy skills. Academics and institutions would still want to develop CMC in their own way and would not adopt other people's programmes that cannot be customised.

The design, development and widespread utilisation of CMC programmes has to be compliant with the academic culture. As argued above, this compliance means that digital teaching and learning materials have to have certain qualities consistent with the way academics work. One of the primary qualities is that they have to be customisable (Jones *et al.*, 1997) and capable of being personalised. In addition, CMC programmes must be capable of being changed and combined with other digital and non-digital course components. The ability to mix-and-match learning materials to support the teacher's experience and consequent course construction is essential. For these reasons, learning materials should be small and object-oriented (Chaloupka and Koppi, 1998).

It is likely that the kind of technology that will be utilised and adapted by teachers is that which supports traditional teaching practices. One fundamental practice is that of delivering information as a lecture which has its place at one end of the didactic/interactive continuum. Delivering information via the web is consistent with

this practice and is an alternative (or an addition) that is readily accepted by teacher and student alike.

The means of providing teachers with ready access to digital learning materials for assembling courses in accordance with many aspects of the academic culture is provided by the National Teaching and Learning Database in Australia. The database is distributed throughout the continent and consists of small reusable digital learning materials (held at a variety of institutions) that can be pulled and assembled into CMC according to the individual academic's way of working. The learning materials range from simple image objects to more complex vignette objects. Chaloupka and Koppi (1998) defined Vignettes as small, first-principle, first-person, heuristic activities (components) from which courses can be constructed by utilising the NTLD.

Chaloupka and Koppi (1998) note that:

> This vignette approach to development allows academics to construct courses in much the same way that is traditionally acceptable. It also allows the vignette to be used in a number of situations and applied across disciplines. Thus the program development is a horizontal developmental process as opposed to vertical development process which is discipline based as represented by the monolithic development approach. Because vignettes are single-issue first principal activities that can be readily modified, they can be shared between disciplines. For instance, pH is taught in a variety of disciplines including medicine, biology, agriculture and chemistry.

The NTLD can be used to construct CMC simply by using the NTLD search function to locate appropriate teaching and learning resources located on a contributing database associated with the NTLD. Some of these resources (considered to be objects) could be images, discussions, vignettes, reference materials, assessments and teaching guides and other teaching resources. These objects can be assembled into a cohesive learning environment or activity as defined by the CMC criteria. The functionality of this working model is based upon the characteristics and idiosyncratic nature of the academic culture.

5. CONCLUSION

Many aspects of the academic culture encourage individuality and idiosyncrasy and these affect the way teachers make courses. For the benefit of student learning, teachers make courses to suit themselves and generally do not adopt whole courses made by others, and that includes computer mediated courseware packages that cannot be customised.

Computer mediated courseware development requires that the course components are easy to locate, obtain and assemble into integrated packages. A national distributed database of learning objects contributes to the resources required for these purposes.

The goal of the NTLD project is to be useful by providing a service to academic course developers. The usefulness of the NTLD is predicated upon the strengths and

limitations of the prevailing complex academic culture that this paper has sought to understand and describe.

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